

REMARKS

1. Summary of the Office Action

Claims 1-3 stand rejected under 35 U.S.C 103(a) as allegedly being unpatentable over U.S. Patent 6,405,256 (hereinafter “Lin”).

2. Response to U.S.C. 103(a) Rejection

The Examiner has rejected claims 1-3 under 35 U.S.C. 103(e) as being obvious in view of Lin. The rejection is respectfully traversed for the reasons set out below

Lin presents a method for data streaming using caching server with expandable buffers and adjustable rate of data transmission to absorb network congestion. However, the present claims are significantly different from Lin. In particular, the present claims teach “temporarily increasing an effective serving rate, for a router configured to receive and transmit packets in a communications network at a time instant corresponding to an onset of congestion of the router, **wherein the effective serving rate is increased for a time period comprising a round-trip time interval for a packet transmitted in the network**” (Claim 1; emphasis added). Lin fails to teach this feature.

Indeed, the Office Action asserts that Lin is silent to the duration the expandable buffer is increased in order to relief the congestion. At best, Lin only describes that if “the expandable buffer has used all of the excess or available memory in CS_M , **a message or indication is sent to the upstream device, for example, caching server level M-1 (hereafter CS_{M-1}) to cease further data segment streaming**, as depicted in step 216. Similarly, the upstream device could be the network server. Thereafter, CS_M **periodically checks** for network congestion between CS_M and CS_{M+1} in step 218. If network congestion exists in the connection between the CS_M and CS_{M+1} , CS_M continues in a non-data segment receiving mode and returns to step 216. If network congestion does not exist, **a message or indication is sent to CS_{M-1} to begin data segment**

streaming again, as indicated in step 220” (Lin, Col. 8 line 66 – Col.9 line 10, emphasis added; Figure 4).

Therefore, Lin discloses that the buffer size is increased for a period that comprises the time required for (1) a stop packet request to reach the upper stream node, (2) verifying the status of the congestion, (3) a start packet request to reach the upper stream node, and (4) a data packet to be transmitted from the upper stream node. Indisputably, the time period as taught by Lin exceeds the round-trip time interval disclosed in the present invention.

Moreover, Lin teaches that “ CS_M periodically checks for network congestion between CS_M and CS_{M+1} in step 218”. **If Lin teaches the present claims that the effective serving rate is increased for a time period comprising a round-trip time interval for a packet transmitted in the network, there will be no need for Lin to periodically check for the network congestion.** Obviously, CS_M periodically checks for network congestion between CS_M and CS_{M+1} in step 218 so as to determine the duration for increasing the buffer size. This contradicts with the present claims. Consequently, the present claims are patentable over Lin.

In an attempt to cure the deficiencies, the Office Action asserts that it is known to one of ordinary skills in the art that a TCP connection in congestion avoidance phase increases the window size by one every round-trip between a source and destination. Therefore, one skilled in the art would have been motivated to increase the expandable buffer of Lin for a time period of a round-trip time interval during the period of congestion. **This conclusion finds no specific support in references, however.** In addition, the Office Action cites no motivation for such modification, other than the desire to minimize packet discards during a congestion avoidance phase of a TCP connection. This rote invocation of a general desire to make existing technologies better is an insufficient basis for reaching a conclusion of obviousness. Indeed, what is needed is an actual showing of motivation to make the desired modification. Therefore, the conclusion of obviousness is fatally flawed and the rejections should be removed.

Claims 2 and 3 depend from claim 1, which Lin fails to anticipate. Indeed, as established above, Lin fails even to suggest the concept of increasing an effective serving rate for a time period comprising a round-trip time interval for a packet transmitted in the network as recited in

claim 1. Consequently, because Claims 2 and 3 depend from claim 1, there can be no conclusion of obviousness with respect to these claims.

In addition, regarding claims 2 and 3, Lin fails to teach or suggest an auxiliary storage area for storing packets that would otherwise be stored in a queue at the router. The Office Action asserts that Lin, Col.8, lines 56-62 teaches that the auxiliary storage area for packets is borrowed from other configured expandable buffers and the buffer in router is just the expandable buffer. This assertion is incorrect. Indeed, Lin describes that the expandable buffer may be increased in a number of ways, “including incremental increases, using available portions of the excess memory as allocated in the caching server or borrowing memory from other configured expandable buffers **in that caching server**” (Col.8, lines 57-60; emphasis added). It will be noted that discloses that each caching server includes expandable buffers, and the borrowing of memory is from other expandable buffers within the same caching server. Having an expandable buffer is exactly the opposite of having an external storage area, which is recited in the present claims.

Hence, there is no evidence that Lin teaches or suggests the presently claimed feature that “the auxiliary storage area is associated with a physical storage device external to the router” (Claim 3). Accordingly, the present rejections should be removed.

3. Conclusion

Having tendered the above remarks and amended the claims as indicated herein, the Applicant respectfully submits that all rejections have been addressed and that the claims are now in a condition for allowance, which is earnestly solicited.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of the present application, the Examiner is invited to contact Jaina Chua at (408) 947-8200 ext. 213.

Respectfully submitted,

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